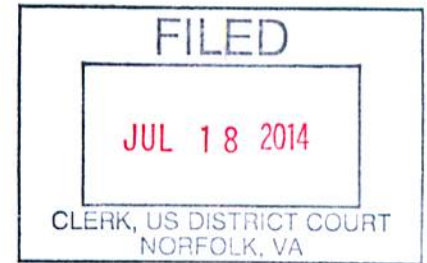


UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF VIRGINIA
Norfolk Division



SWIMWAYS CORPORATION and
VAP CREATIVE, LTD.,

Plaintiffs,

v.

Case No.: 2:13cv334

ZURU, INC.,

Defendant.

OPINION AND ORDER

This matter is currently before the Court on a motion for summary judgment filed by Zuru, Inc. ("Zuru" or "Defendant"), ECF No. 53, and a motion for partial summary judgment filed by Vap Creative, Ltd. ("Vap") and SwimWays Corporation ("Swimways") (collectively, "Plaintiffs"), ECF No. 56. The Court conducted a hearing on the summary judgment motions on July 15, 2014. For the reasons that follow, Defendant's motion seeking summary judgment is **GRANTED** and Plaintiffs' motion seeking partial summary judgment is **DENIED**.

I. FACTUAL AND PROCEDURAL BACKGROUND

As discussed at length in this Court's Markman Opinion, ECF No. 38, at issue in this case is a single patent titled "Self-Propelled Figure," U.S. Patent No. 6,860,785 ("the '785 patent"). The claims of the '785 patent are directed toward "a self-propelled toy figure, and in particular, to a water toy,

such as, a fish or a sea turtle, that can traverse through a liquid, such as water.” ‘785 patent at 1:5-7, ECF No. 40-1. “The figure includ[es] a torso, a flexible appendage coupled to the torso, and a drive configured to move the appendage with respect to the torso.” Id. at 1. The purportedly unique feature of the claimed invention is the figure’s flexible appendage, which is “configured to flex while [it] is moving with respect to the torso,” and “[t]he relative motion and the flex of the appendage effectively propel the toy figure through the liquid and provide the appendage with life-like movements.” Id. at 1:23-29; 1:61-67.

On June 14, 2013, Plaintiffs filed the instant patent infringement action, alleging that Zuru LLC “sells a variety of robotic fish products . . . that infringe one or more claims of the ‘785 patent.” Complaint ¶ 12, ECF No. 1.¹ Specifically, “[P]laintiffs assert that [Defendant] infringes . . . [C]laims 31-35 and 38 of the ‘785 Patent (‘asserted claims’).” Def.’s Br. Supp. Mot. for Summ. J. at 3, ECF No. 54. On May 30, 2014, the parties filed cross-motions for summary judgment on issues involving infringement and invalidity of the ‘785 patent.

¹ Plaintiffs filed an Amended Complaint on March 14, 2014, alleging infringement by Zuru, Inc. ECF No. 40. At the July 15, 2014 summary judgment hearing, counsel for Defendant confirmed that Zuru, Inc. is the only proper defendant in this case, as Zuru LLC did not import or sell any allegedly infringing products in the Eastern District of Virginia.

Plaintiffs allege in their motion for partial summary judgment that, with respect to Claims 31, 32, 34, and 35, Defendant has failed to "come forward with specific evidence rebutting [Plaintiffs'] evidence of infringement and showing that there is a genuine dispute of fact which merits a trial." Pls.' Br. Supp. Mot. for Summ. J. at 7, ECF No. 57. Defendant asserts in response - as well as in its own summary judgment motion - that Defendant "cannot be liable for infringement because [P]laintiffs' patent is invalid in the first place." Def.'s Br. Supp. Mot. for Summ. J. at 1, ECF No. 54; see also Def.'s Br. in Opp'n at 4-5, ECF No. 65. Specifically, Defendant contends that the '785 patent is invalid "because each and every one of the patent's asserted claims [is] anticipated by or obvious over at least four separate prior art references." Def.'s Br. Supp. Mot. for Summ. J. at 2, ECF No. 54. Both motions have been fully briefed and are therefore ripe for review.

II. STANDARD OF REVIEW

A. Summary Judgment Standard

The Federal Rules of Civil Procedure provide that a district court shall grant summary judgment in favor of a movant if such party "shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a). The mere existence of some

alleged factual dispute between the parties "will not defeat an otherwise properly supported motion for summary judgment; the requirement is that there be no genuine issue of material fact." Anderson v. Liberty Lobby Inc., 477 U.S. 242, 247-48 (1986).

Once a movant has properly advanced evidence supporting entry of summary judgment, the non-moving party may not rest upon the mere allegations of the pleadings, but instead must set forth specific facts in the form of exhibits and sworn statements illustrating a genuine issue for trial. Celotex Corp. v. Catrett, 477 U.S. 317, 322-24 (1986); see also Fed. R. Civ. P. 56(e)(2). At that point, "the judge's function is not himself to weigh the evidence and determine the truth of the matter but to determine whether there is a genuine issue for trial." Anderson, 477 U.S. at 249. In doing so, the judge must construe the facts and all "justifiable inferences" in the light most favorable to the non-moving party, and the judge may not make credibility determinations. Id. at 255; T-Mobile Ne. LLC v. City Council of Newport News, 674 F.3d 380, 385 (4th Cir. 2012). After viewing the evidence in the non-movant's favor, "the judge must ask himself not whether he thinks the evidence unmistakably favors one side or the other but whether a fair-minded jury could return a verdict for the [non-movant] on the evidence presented." Anderson, 477 U.S. at 252. Because a ruling on summary judgment "necessarily implicates the

substantive evidentiary standard of proof that would apply at the trial on the merits[,] . . . [t]he mere existence of a scintilla of evidence in support of the plaintiff's position will be insufficient" to overcome a defendant's well-founded summary judgment motion. Id. Accordingly, if the non-movant's evidence "is merely colorable, or is not significantly probative, summary judgment may be granted." Id. at 249-50.

B. Patent Invalidity Standard

A patent is presumed valid upon issuance from the United States Patent and Trademark Office, and the "burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity." 35 U.S.C. § 282. Overcoming this presumption requires the party seeking to invalidate a patent to prove invalidity by clear and convincing evidence. Microsoft Corp. v. i4i Ltd. P'ship, 131 S. Ct. 2238, 2246 (2011) (citing Radio Corp. of Am. v. Radio Eng'g Labs., 293 U.S. 1, 8 (1934)). This standard applies at the summary judgment stage. Invitrogen Corp. v. Biocrest Mfg., L.P., 424 F.3d 1374, 1378 (Fed. Cir. 2005). Thus, in order to prevail at the summary judgment stage, the party seeking summary judgment on the issue of patent invalidity "must submit such clear and convincing evidence of invalidity so that no reasonable jury could find otherwise." Eli Lilly & Co. v. Barr Labs., Inc., 251 F.3d 955, 962 (Fed. Cir. 2001); Apple Computer, Inc. v.

Articulate Sys., Inc., 234 F.3d 14, 20 (Fed. Cir. 2000). A patent is invalid if it was anticipated by prior art, see 35 U.S.C. § 102, or if the claimed invention "would have been obvious . . . to a person having ordinary skill in the art to which the claimed invention pertains," 35 U.S.C. § 103.

1. Invalidity Based on Anticipation

"A patent claim is invalid due to anticipation if, within 'the four corners of a single, prior art document . . . every element of the claimed invention [is described], either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation.'" Callaway Golf Co. v. Acushnet Co., 576 F.3d 1331, 1346 (Fed. Cir. 2009) (quoting Advanced Display Sys., Inc. v. Kent State Univ., 212 F.3d 1272, 1282 (Fed. Cir. 2000)). "In order to anticipate a claimed invention, a prior art reference must enable one of ordinary skill in the art to make the invention without undue experimentation." Impax Labs., Inc. v. Aventis Pharms., Inc., 545 F.3d 1312, 1314 (Fed. Cir. 2008).

"[A] prior art reference may anticipate without disclosing a feature of the claimed invention if that missing characteristic is necessarily present, or inherent, in the single anticipating reference." Schering Corp. v. Geneva Pharms., Inc., 339 F.3d 1373, 1377 (Fed. Cir. 2003). "However, 'anticipation by inherent disclosure is appropriate only when

the reference discloses prior art that must necessarily include the unstated limitation, [or the reference] cannot inherently anticipate the claims.'" In re Omeprazole Patent Litig., 483 F.3d 1364, 1378 (Fed. Cir. 2007) (alteration in original) (quoting Transclean Corp. v. Bridgewood Servs., Inc., 290 F.3d 1364, 1373 (Fed. Cir. 2002)).

"A determination that a claim is anticipated involves a two-step analysis: 'the first step requires construing the claim,' and '[t]he second step in the analysis requires a comparison of the properly construed claim to the prior art.'" Id. at 1332 (quoting Power Mosfet Techs., LLC v. Siemens AG, 378 F.3d 1396, 1406 (Fed. Cir. 2004)). "[D]ifferences between the prior art reference and a claimed invention, however slight, invoke the question of obviousness, not anticipation." Net MoneyIN, Inc. v. VeriSign, Inc., 545 F.3d 1359, 1371 (Fed. Cir. 2008). Although "anticipation is a question of fact," rather than a question of law, "it may be decided on summary judgment if the record reveals no genuine dispute of material fact.'" Enzo Biochem, Inc. v. Applera Corp., 599 F.3d 1325, 1331 (Fed. Cir. 2010) (quoting Leggett & Platt, Inc. v. VUTEk, Inc., 537 F.3d 1349, 1352 (Fed. Cir. 2008)).

2. Invalidity Based on Obviousness

A patent is invalid based on obviousness "if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a). "[A] district court can properly grant, as a matter of law, a motion for summary judgment on patent invalidity when the factual inquiries into obviousness present no genuine issue of material fact[]." Tokai Corp. v. Easton Enters., Inc., 632 F.3d 1358, 1366 (Fed. Cir. 2011) (quoting Ryko Mfg. Co. v. Nu-Star, Inc., 950 F.2d 714, 716 (Fed. Cir. 1991)); accord Union Carbide Corp. v. Am. Can Co., 724 F.2d 1567, 1571 (Fed. Cir. 1984); Chore-Time Equip., Inc. v. Cumberland Corp., 713 F.2d 774, 778-79 (Fed. Cir. 1983).

To challenge a patent's claims as obvious, a party must "demonstrate 'by clear and convincing evidence that a skilled artisan would have had reason to combine the teaching of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success from doing so.'" Procter & Gamble Co. v. Teva Pharms. USA, Inc., 566 F.3d 989, 994 (Fed. Cir. 2009) (quoting Pfizer, Inc. v. Apotex, Inc., 480 F.3d 1348, 1361 (Fed. Cir. 2007)). "The factual underpinnings, often referred to as the Graham factors, include 1) the scope and content of the prior art; 2) the level of ordinary skill in the art; 3) the differences between the claimed invention and the prior art; and 4) evidence

of secondary factors, also known as objective indicia of nonobviousness.” Unigene Labs., Inc. v. Apotex, Inc., 655 F.3d 1352, 1360 (Fed. Cir. 2011) (quoting Graham v. John Deere Co., 383 U.S. 1, 17-18 (1966)); see also KSR Int’l Co. v. Teleflex Inc., 550 U.S. 398, 406 (2007).

A district court is required to consider all of the evidence under the four Graham factors before reaching a conclusion with respect to obviousness. In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig., 676 F.3d 1063, 1076-77 (Fed. Cir. 2012). Although “the district court can and should take into account expert testimony, which may resolve or keep open certain questions of fact,” KSR Int’l, 550 U.S. at 427, the obviousness inquiry “also may include recourse to logic, judgment, and common sense available to the person of ordinary skill,” which “do not necessarily require explication in any reference or expert opinion,” Perfect Web Techs., Inc. v. InfoUSA, Inc., 587 F.3d 1324, 1329 (Fed. Cir. 2009).

It is well-settled that “[o]bviousness requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination.” Unigene Labs., 655 F.3d at 1360. “Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and

development to yield the claimed invention." Id. (citing KSR Int'l, 550 U.S. at 421 (describing that a person of ordinary skill possesses "ordinary creativity, [and is] not an automaton"); Bayer Schering Pharm. AG v. Barr Labs., Inc., 575 F.3d 1341, 1350 (Fed. Cir. 2009) (Newman, J., dissenting) ("The statutory criterion is whether the invention would have been obvious to persons of ordinary skill at the time of the invention, not whether it is sufficiently simple to appear obvious to judges after the discovery is finally made.")). However, "expert testimony concerning motivation to combine may be unnecessary and, even if present, will not necessarily create a genuine issue of material fact." Wyers v. Master Lock Co., 616 F.3d 1231, 1239 (Fed. Cir. 2011). Indeed, "obviousness is not subject to a 'rigid formula,'" and "'common sense of those skilled in the art demonstrates why some combinations would have been obvious where others would not.'" Perfect Web Techs., 587 F.3d at 1329. (quoting Leapfrog Enters. v. Fisher-Price, Inc., 485 F.3d 1157, 1161 (Fed. Cir. 2007)). Where "the content of the prior art, the scope of the patent claim, and the level of ordinary skill in the art are not in material dispute, and the obviousness of the claim is apparent in light of these factors, summary judgment is appropriate." Wyers, 616 F.3d at 1239 (quoting KSR Int'l, 550 U.S. at 427).

C. Patent Infringement Standard

A patent is infringed when a person "without authority makes, uses or sells any patented invention, within the United States . . . during the term of the patent." 35 U.S.C. § 271(a). "An infringement analysis involves two steps. First, the court determines the scope and meaning of the patent claims asserted, and then the properly construed claims are compared to the allegedly infringing device." Cybor Corp. v. Fas Techs., 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc) (citing Markman v. Westview Instruments, Inc., 517 U.S. 370, 372 (1996); Read Corp. v. Portec, Inc., 970 F.2d 816, 821 (Fed. Cir. 1994)). On a motion for summary judgment, the court must determine whether the "patentee's expert [has] set forth the factual foundation for his infringement opinion in sufficient detail for the court to be certain that features of the accused product would support a finding of infringement under the claim construction adopted by the court", drawing all reasonable inferences "in favor of the non-movant." Intellectual Sci. & Tech., Inc. v. Sony Elecs., Inc., 589 F.3d 1179, 1183 (Fed. Cir. 2009) (citing Arthur A. Collins, Inc. v. N. Telecom Ltd., 216 F.3d 1042, 1047-48 (Fed. Cir. 2000)). "[A] good faith dispute about the meaning and scope of asserted claims does not, in and of itself, create a genuine dispute to preclude summary judgment in patent cases." Phonometrics, Inc. v. N. Telecom Inc., 133 F.3d 1459, 1463 (Fed.

Cir. 1998). Thus, although “[t]he determination of infringement, whether literal or under the doctrine of equivalents, is a question of fact,” the determination of infringement “is properly decided upon summary judgment when no reasonable jury could find that every limitation recited in the properly construed claim either is or is not found in the accused device either literally or under the doctrine of equivalents.” Gart v. Logitech, Inc., 254 F.3d 1334, 1339 (Fed. Cir. 2001).

III. DISCUSSION

Plaintiffs seek partial summary judgment on their infringement claims, arguing that they have presented sufficient evidence demonstrating that Defendant has infringed “Claims 31, 32, 34, and 35” of the ‘785 patent, which they claim Defendant has failed to rebut. Pls.’ Br. Supp. Mot. for Summ. J. at 7, ECF No. 57. Defendant responds that “[P]laintiffs’ motion lacks merit entirely” because “an invalid patent cannot be infringed” and, even if the ‘785 patent were valid, the evidence “unquestionably demonstrates that [Defendant] does not infringe the patent in suit.” Def.’s Br. in Opp’n at 1 & n.1, 4-6, ECF No. 65.

Defendant seeks summary judgment on invalidity grounds, arguing that “the ‘785 patent is invalid and unenforceable as a matter of law due to lack of novelty and/or obviousness under 35

U.S.C. §§ 102 and 103.” Def.’s Mot. for Summ. J. at 1, ECF No. 53. Specifically, Defendant argues that independent Claim 31 of the ‘785 patent “is invalid as anticipated by a wide variety of prior art references,” and “dependent Claims 32-35 and 38 are anticipated or obvious in light of the prior art.” Def.’s Br. Supp. Mot. for Summ. J. at 17, 20, ECF No. 54 (capitalization omitted). In support of its motion, Defendant submits an expert invalidity report authored by Dr. Michael Triantafyllou, ECF No. 54-3, who identified “four separate primary prior art references” to the ‘785 patent, none of which “were before the United States Patent Office examiner during the prosecution of the ‘785 patent.” Id. at 4.² See Glaxo Grp. Ltd. v. Apotex, Inc., 376 F.3d 1339, 1348 (Fed. Cir. 2004) (observing that an accused infringer’s “burden is especially difficult when . . . the infringer attempts to rely on prior art that was before the patent examiner during prosecution”). Plaintiffs argue that the references identified by Defendant and Dr. Triantafyllou “fail

² The parties do not dispute that the references identified in Dr. Triantafyllou’s report “are prior art to the ‘785 patent.” Pl.’s Br. in Opp’n at 2, ECF No. 68; see also Final Pretrial Order ¶¶ 14-19, ECF No. 87. The Court notes that “United States Patent No. 6,179,683 B1” (“the Pell patent”), also identified in the Final Pretrial Order as prior art, id. ¶ 15, does not appear to be included in the summary judgment record before the Court, although Dr. Triantafyllou’s reply invalidity report indicates that the Pell patent was “attached as Exhibit 22” to his report, Reply Invalidity Report of Dr. Triantafyllou at 32, ECF No. 70-3. Thus, the Court will limit its invalidity discussion to the four primary references discussed in Dr. Triantafyllou’s invalidity report - Van Ruymbeke, Yamamoto, Triantafyllou ‘750, and Hirata.

to anticipate or render obvious the asserted claims.” Pls.’ Br. in Opp’n at 2, ECF No. 68. In support of their argument, Plaintiffs submit a rebuttal expert invalidity report by Mr. Ian Ayton, ECF No. 68-4.

Before proceeding to the invalidity and infringement issues surrounding the ‘785 patent, the Court will first address the parties’ remaining dispute regarding the Court’s construction of one of the disputed claim terms, as a proper construction of the claim language is vital to the Court’s analysis of the parties’ invalidity and infringement arguments.

A. Proper Construction of the Claim Language

The Court issued its Markman Opinion on March 10, 2014, construing five disputed claim terms in the ‘785 patent. ECF No. 38. In their briefs on summary judgment, however, the parties maintain some disagreement with respect to the claim term “configured to flex in response to said drive producing the relative motion” AND “configured to flex into a non-planar configuration in response to said drive producing the relative motion.” Id. at 32. Specifically, the parties disagree as to the scope of the terms “configured to” and “in response to said drive producing the relative motion.”

1. “configured to”

Defendant alleges that it is not liable for infringement, in part, because, although the appendage of the accused product

"is indeed made of an elastomeric material, a material that is capable of bending, . . . the '[appendage] is not specifically configured to bend in response to the drive motion.'" Def.'s Br. in Opp'n at 7-8, ECF No. 65 (emphasis in original) (quoting Infringement Report of Dr. Triantafyllou at 11, ECF No. 65-1). Plaintiffs argue that Defendant's "attempt to insert the word 'specifically' into the Court's claim construction" is an "apparent attempt to infuse the [claim] language 'configured to' with some special - albeit never-clearly-defined - meaning." Pls.' Br. Supp. Mot. for Summ. J. at 8-9, ECF No. 57.

In its Markman opinion, the Court discussed at length the term "configured to" with respect to the claim term "configured to propel the figure through the liquid." See, e.g., ECF No. 38 at 24, 27-31. The Court rejected Defendant's proposed construction "replacing 'configured to' with 'capable of,'" because "a construction that an appendage is merely 'capable' of propelling a figure through liquid fails to adequately convey that the appendage is actually 'configured to' propel the figure through the liquid." Id. at 28 (citing Typhoon Touch Techs., Inc. v. Dell, Inc., 659 F.3d 1376, 1380 (Fed. Cir. 2011) (distinguishing between a device configured to perform a certain function and a device that is simply capable of being configured to perform that function)). Recognizing that "interpreting 'configured to' as 'capable of' would render [certain] claims

'virtually devoid of meaning," id. at 29 (quoting Sipco, LLC v. Abb, Inc., No. 6:11-CV-0048, 2012 U.S. Dist. LEXIS 106659, at *33 (E.D. Tex. July 30, 2012)), the Court "construe[d] 'configured to' as having its plain and ordinary meaning, which the Court understands to require not merely being capable of being configured but rather being actually configured,'" id. at 31 (quoting Sipco, LLC v. Amazon.com, Inc., No. 2:08-cv-359, 2012 U.S. Dist. LEXIS 150940, at *147 (E.D. Tex. Oct. 19, 2012)). Likewise, the Court maintains that the plain and ordinary meaning of "configured to" is sufficient in the context of the instant claim term, as Defendant's "proposal of construing the term as meaning '[specifically] configured' adds nothing that is not already present in the plain and ordinary meaning of the term." Amazon.com, 2012 U.S. Dist. LEXIS 150940, at *147; see also McHugh v. Hillerich & Bradsby Co., No. C 07-03677, 2010 U.S. Dist. LEXIS 16164, at *16 (N.D. Cal. Feb. 24, 2010) (noting that the term "'configured to' embraces the concept of a device intentionally and specifically made to act in a certain way" and "refer[s] to an intentional design" (citation omitted)).

2. "in response to said drive producing the relative motion"

Defendant asserts that Plaintiffs, through their expert, Mr. Ayton, have improperly modified the Court's construction of the term "in response to said drive producing the relative

motion" in an "attempt to import additional limitations into [C]laim 31 in a vain effort to steer clear of the overwhelming prior art that dooms that claim." Def.'s Br. Supp. Mot. for Summ. J. at 16, ECF No. 54. Plaintiffs respond that Mr. Ayton simply added "bracketed language [to the Court's construction] for the purpose of clarity," and it is actually Defendant "that is misapplying the Court's claim construction." Pls.' Br. in Opp'n at 6, ECF No. 68.

In their Markman briefs, Plaintiffs proposed that the Court should adopt the "plain and ordinary meaning" of the disputed term, Pls.' Markman Br. at 12, ECF No. 20, and Defendant proposed the construction, "The appendage is capable of bending such that the entire appendage is not in a single plane," Def.'s Markman Br. at 12, ECF No. 21. At the Markman hearing, Plaintiffs argued that Defendant's proposed construction was "not quite accurate in the sense that it doesn't refer to bending, flexing in response to the drive." Hr'g Tr. at 28, ECF No. 35. Plaintiffs explained that, "when the drive goes and the appendage is going back and forth, the forces of the drive, [and] the forces of the water are going to cause that appendage to flex out of plane. So it's in response to the drive." Id. Defendant's proposed construction, Plaintiffs contended, "tak[es] it out of context of . . . its ordinary use in a liquid when the drive is causing that flexing." Id. at 28-29. A

better construction, Plaintiffs offered, was one that "says that it bends out of plane in response to the drive that's described elsewhere in the claim." Id. at 29.

After considering Plaintiffs' argument, the Court proposed the construction, "the appendage bends, in response to the motion produced by said drive, such that the entire appendage is not in a single plane,"³ and Plaintiffs asserted that they "would be pretty comfortable with that." Id. at 29-30. When the Court asked what Defendant thought of the construction, Defendant answered, "I think we can make this one pretty easy for Your Honor: We would be perfectly fine with that construction. We don't oppose that." Id. "In fact," Defendant continued, "we offered to just drop the 'in response to said drive' from the proposed construction because we think that's inherent and we don't think it's also an issue." Id. It now appears, however, that "in response to said drive" is "an issue," id., as Defendant's invalidity arguments center around "four separate primary prior art references," Def.'s Br. Supp. Mot. for Summ. J. at 4, ECF No. 54, all of which, according to Defendant, disclose appendages "configured to flex in response to the

³ In its Markman opinion, the Court adopted the agreed-upon construction "with minor adjustments reflecting the grammatical form of the original term," such that the Court's final construction read: "configured to bend, in response to the motion produced by said drive, such that the entire appendage is not in a single plane." ECF No. 38 at 32. The Court extended to the parties an opportunity to "object[] to the construed term as adjusted by the Court." Id. at 32-33. Neither party filed any objection to the final construction.

motion of the drive," Def.'s Reply Br. at 7, ECF No. 70.

Defendant argues that Plaintiffs' expert, Mr. Ayton, advanced in his rebuttal report the following improper interpretation of the agreed-upon construction: "configured to bend, in response to the [cyclical relative] motion [between the appendage and the torso] produced by said drive, such that the entire appendage is not in a single plane," as an "attempt to import additional limitations into [C]laim 31 in a vain effort to steer clear of the overwhelming prior art that dooms that claim," Def.'s Br. Supp. Mot. for Summ. J. at 16, ECF No. 54 (alterations and emphases in original). Defendant contends that Claim 31 "states that the appendage is 'configured to flex in response to said drive producing the relative motion,' - not 'in response to the [cyclical relative] motion [between the appendage and the torso]' - as [P]laintiffs would have this Court to believe." Id. (alterations and emphases in original). Plaintiffs vigorously dispute that their construction varies from either the Court's construction or the plain language of the claim, asserting that Mr. Ayton's "bracketed language" added to the Court's construction "merely clarifies it by providing a reminder of the nature of the referenced 'motion produced by said drive,'" Pls.' Br. in Opp'n at 6, ECF No. 68.

The Court agrees that Mr. Ayton's "bracketed language" merely provides "clarity" to the construction agreed upon by the

parties at the Markman hearing. Id. Looking first “to the words of the claims themselves,” Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996)), the plain language of Claim 31 indicates that the claimed appendage is “configured to flex in response to said drive producing the relative motion.” ‘785 patent at 11:29-30, ECF No. 40-1 (emphasis added). In the preceding paragraph of Claim 31, the patentee describes the “relative motion” produced by “said drive,” id., explaining that the drive “produce[s] [a] cyclical relative motion between said appendage and said torso.” Id. at 11:26-27 (emphasis added). Nowhere in Claim 31 does the patentee describe any other motion “produced by the drive.” Id. The plain language of Claim 1 discloses an “appendage being configured to flex into a non-planar configuration in response to said drive moving said first appendage with respect to said torso,” ‘785 patent at 8:9-11, ECF No. 40-1 (emphasis added), indicating that it is specifically the relative motion between the appendage and the torso that causes the appendage to flex. See Phillips, 415 F.3d at 1314 (asserting that “[o]ther claims . . . , both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term” because “claim terms are normally used consistently throughout the patent”).

The Court also considers the claims “in view of the specification, of which [the claims] are a part.” Id. at 1315 (quoting Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)); see also Vitronics, 90 F.3d at 1582 (observing that the specification is usually “the single best guide to the meaning of a disputed term”). The detailed description of the ‘785 patent explains that the “drive 140 is configured to move the appendage 160 with respect to the torso 120” and, “[w]hen the appendage 160 moves with respect to the torso 120, the flexible portion 164 of the appendage flexes or bends.” ‘785 patent at 2:12-16, ECF No. 40-1. Thus, it is clear that the patentee intended to disclose an appendage that “flexes or bends” when the drive “move[s] the appendage 160 with respect to the torso 120.” Id.

During the lengthy discussion between Plaintiffs and the Court at the Markman hearing, Plaintiffs made clear their position that, “when the drive goes and the appendage is going back and forth, the forces of the drive, [and] the forces of the water are going to cause that appendage to flex out of plane. So it’s in response to the drive.” Hr’g Tr. at 28, ECF No. 35 (emphasis added). Neither at the Markman hearing nor in a timely objection to the Court did Defendant ever suggest that the appendage claimed in Claim 31 is “configured to flex in response to the motion of the drive,” Def.’s Reply Br. at 7, ECF

No. 21, as Defendant now argues, rather than in response to the motion produced by the drive, as the parties and the Court agreed at the Markman hearing. Moreover, to the extent that Defendant argues that the Court's construction varies from "[C]laim 31's plain language," Def.'s Br. Supp. Mot. for Summ. J. at 17, ECF No. 54, the Court finds that the phrase "in response to the motion produced by said drive" contained in the Court's construction is synonymous with the phrase "in response to said drive producing the relative motion" contained in Claim 31, especially when read in the context of the entire claim. Thus, the Court finds that Mr. Ayton's alterations of the Court's construction of the disputed term are not "an express misapplication of the Court's claim construction order," Pls.' Br. Supp. Mot. for Summ. J. at 16, ECF No. 54, but instead "merely clarif[y the construction] by providing a reminder of the nature of the referenced 'motion produced by said drive,'" Pls.' Br. in Opp'n at 6, ECF No. 68. Accordingly, the Court sees no need to further construe the disputed term. Having confirmed the proper construction of the claims, the Court next addresses Defendant's arguments regarding the alleged invalidity of the asserted claims.

B. Defendant's Summary Judgment Motion based on Invalidity

Relying on "an expert report authored by Dr. Michael S. Triantafyllou, a leading robotic fish expert," Defendant alleges

that "the asserted claims [of the '785 patent] are invalid as anticipated by and/or obvious over . . . four separate primary prior art references," which render the "asserted claims unpatentable." Def.'s Br. Supp. Mot. for Summ. J. at 4, 10, ECF No. 54. Plaintiffs disagree, arguing that the rebuttal expert report prepared by their expert, Mr. Ayton, "raises a genuine issue of material fact so as to preclude summary judgment." Pls.' Br. in Opp'n at 7, ECF No. 68.

The Court notes that some of the assertions contained in Defendant's listing of "Undisputed Facts" fail to satisfy this Court's Local Rule 56(B), which requires a "listing [of] all material facts as to which the moving party contends there is no genuine issue and citing the parts of the record relied on to support the listed facts as alleged to be undisputed." E.D. Va. Loc. Civ. R. 56(B) (emphasis added). For example, the sixth paragraph of Defendant's "Undisputed Facts", which appears to be the basis for Defendant's invalidity arguments, simply alleges that Defendant's expert, Dr. Triantafyllou, "concluded that the asserted claims are without question anticipated by or obvious over four separate primary prior art references." See Def.'s Br. Supp. Mot. for Summ. J. at 4, ECF No. 54 (citing Invalidity Report of Dr. Triantafyllou, ECF No. 54-3). However, Defendant does not assert as undisputed the "material facts" supporting Dr. Triantafyllou's conclusions, but merely cites Dr.

Triantafyllou's report as the "parts of the record relied on to support" such conclusions. E.D. Va. Loc. Civ. R. 56(B).

The "undisputed fact" of an expert's conclusions is not sufficient to establish an absence of "a genuine issue necessary to be litigated." E.D. Va. Loc. Civ. R. 56(B). Indeed, the Supreme Court has made clear that, although a "district court can and should take into account expert testimony, which may resolve or keep open certain questions of fact," the ultimate legal determinations are to be made by the court. KSR Int'l, 550 U.S. at 427 (emphasis added). In any event, Plaintiffs "dispute[] Dr. Triantafyllou's conclusions." Pls.' Br. in Opp'n at 2, ECF No. 68. Thus, the Court will disregard all factually unsupported conclusions contained in Defendant's listing of "Undisputed Facts," and will instead consider the parties' specific arguments in the body of their briefs in order to determine whether the record reveals "a genuine issue necessary to be litigated." E.D. Va. Loc. Civ. R. 56(B). The Court follows the organization of the experts' reports and discusses in turn the four prior art references identified by Dr. Triantafyllou in his invalidity report.

1. Van Ruymbeke

The Van Ruymbeke reference is an international patent application identified as "PCT Publication No. WO 91/11235 to Van Ruymbeke (published Aug. 8, 1991) ('Van Ruymbeke'),"

Invalidity Report of Dr. Triantafyllou at 10, ECF No. 54-3. Van Ruymbeke pertains to a "swimming" toy that is "able to move in the water." Van Ruymbeke at 1, ECF No. 54-7 (English trans.). For purposes of background, the Van Ruymbeke abstract reads as follows:

A swimming toy comprising an elongate hollow body (1) to which are attached two flexible side fins (3) whose leading edges (3b) are provided with fin rods (4) made of a rigid or semi-rigid material. The forward part of said hollow body houses a mechanism (7) for controlling the fins (3) having at least one driving device (100) and two oscillating levers (19a, 19b) each of which is connected or connectable to one of the fin rods (4), said control mechanism being actuated by means of a motive device (14) housed in said hollow body (1) and providing propulsive power. The body (1) of said toy includes an outer shell or skin (2) made from a flexible material and integrally formed with the side fins (3), and a rigid internal skeleton (6-8a-8b-9) housed in said shell or skin (2) and containing the fin (3) control mechanism (7).

Id. According to Van Ruymbeke's specification, the "swimming toy according to the invention can move in the water, perfectly imitating the swimming mode of certain fish such as Rays." Id. at 2. Specifically, Van Ruymbeke explains "that the oscillatory movement of the levers . . . communicates reciprocating pivotal movement of the beams [of the] fin[s]," in a "plane perpendicular to the longitudinal axis of the toy, the alternative pivot generating flapping movements or rippling . . . propelling said toy in water." Id. at 4.

In its motion for summary judgment, Defendant contends

that, based on the invalidity report of its expert, Dr. Triantafyllou, Van Ruymbeke anticipates Claims 31-34 and renders obvious Claims 35 and 38. See Def.'s Br. Supp. Mot. for Summ. J. at 17-18, 21-22, ECF No. 54. Plaintiffs disagree, pointing to the specific arguments advanced in the rebuttal invalidity report of its expert, Mr. Ayton. See Pls.' Br. in Opp'n at 7-11, ECF No. 68. The Court considers each asserted claim in turn.

a. Anticipation of Claims 31-34

As discussed above, an anticipation analysis consists of two steps, (1) "'construing the claim,'" and (2) conducting "'a comparison of the properly construed claim to the prior art.'" Enzo Biochem, 599 F.3d at 1332 (quoting Power Mosfet Techs., 378 F.3d at 1406). Having completed the first step with respect to construing the disputed claim terms, the Court next conducts a "comparison of the properly construed claim[s] to the prior art.'" Id.

i. Claim 31

Independent Claim 31 of the '785 patent discloses:

[preamble]

A figure configured to be at least partially immersed in and propelled through a liquid, said figure comprising:

[the "torso limitation"]

a torso defining a cavity, said torso simulating an figure torso;

[the "flexible appendage" limitation]
a flexible appendage disposed outside of the cavity and coupled to said torso, said appendage configured to propel the figure through the liquid; and

[the "drive" limitation]
a drive coupled to said torso and to said appendage, said drive configured to produce forces on said torso and on said appendage sufficient to produce cyclical relative motion between said appendage and said torso when the figure is at least partially immersed in the liquid,

[the "configured to flex" limitation]
said appendage being configured to flex in response to said drive producing the relative motion, said appendage being configured to flex into a non-planar configuration in response to said drive producing the relative motion.

'785 patent at 11:16-33, ECF No. 40-1. Defendant asserts that its expert, "Dr. Triantafyllou has established that the Van Ruymbeke reference anticipates [C]laim 31 of the '785 patent." Def.'s Br. Supp. Mot. for Summ. J. at 17, ECF No. 54. Plaintiffs disagree, arguing that "the Van Ruymbeke reference does not satisfy the 'configured to flex' limitation of Claim 31." Pls.' Br. in Opp'n at 7, ECF No. 68.

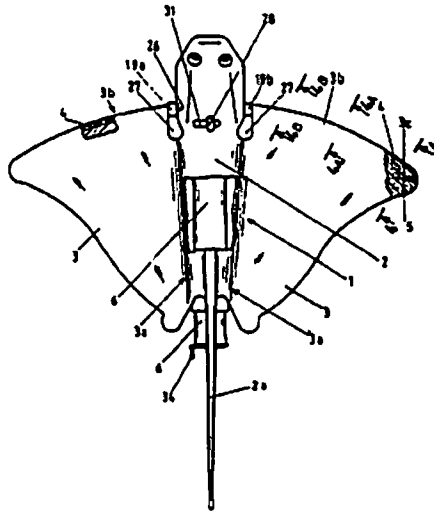
the preamble

The abstract of Van Ruymbeke describes a "swimming toy," which includes a "control mechanism being actuated by means of a motive device . . . and providing propulsive power. Van Ruymbeke at 1, ECF No. 54-7. The description of Van Ruymbeke states, "[t]he present invention relates to a toy swimming able to move in the water." Id. The Court agrees, and Plaintiffs do

not dispute, that Van Ruymbeke anticipates the preamble of Claim 31.

the "torso" limitation

The abstract of Van Ruymbeke discloses "[a] swimming toy comprising an elongate hollow body." Id. Figure 1 of Van Ruymbeke, reproduced below, depicts "a plan view" of the "toy swimming according to the invention." Id. at 2. The Court agrees, and Plaintiffs do not dispute, that Van Ruymbeke anticipates the "torso" limitation disclosed by Claim 31.



the "flexible appendage" limitation

The abstract of Van Ruymbeke explains that "two flexible side fins" are attached to the "elongate hollow body" of the "swimming toy." Id. at 1. The "hollow body houses a mechanism (7) for controlling the fins," which is "driven by a drive device housed in said hollow body and providing the driving force," so that the swimming toy "can move in the water." Id.

at 1, 2. The Court finds, and Plaintiffs do not dispute, that Van Ruymbeke discloses the "flexible appendage" limitation of Claim 31.

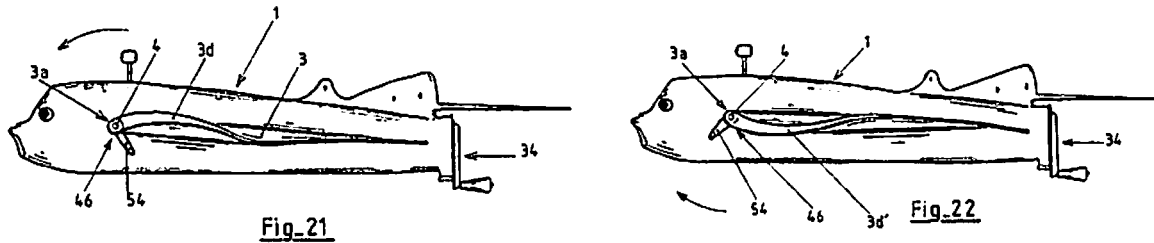
the "drive" limitation

Because the "drive" limitation of Claim 31 contains several subparts, the Court examines each in turn. First, the abstract of Van Ruymbeke discloses a "drive coupled to said torso and said appendage[s]," as claimed in Claim 31 of the '785 patent. '785 patent at 11:24, ECF No. 40-1. Van Ruymbeke explains that the "hollow body" of the Van Ruymbeke "swimming toy" includes "at least one driving device (11) and two oscillating levers (19a, 19b) each of which is connected or connectable to one of the fin rods (4), said control mechanism being actuated by means of a motive device (14) housed in said hollow body (1) and providing propulsive power." Van Ruymbeke at 1, ECF No. 54-7. Second, Van Ruymbeke's description discloses a "drive configured to produce forces on said torso and on said appendage," '785 patent at 11:25-26, ECF No. 40-1, asserting that "[t]he mechanism described above is used to communicate the same reciprocating pivoting [of] the rocker arm," Van Ruymbeke at 4, ECF No. 54-7. Third, Van Ruymbeke discloses forces produced by the drive that are "sufficient to produce cyclical relative motion between said appendage and said torso when the figure is at least partially immersed in the liquid." '785 patent at

11:26-28, ECF No. 40-1. Specifically, Van Ruymbeke provides, "[i]t is understood that the oscillatory movement of the levers 19a, 19b communicates reciprocating pivotal movement of the beams fin 4, . . . the alternative pivot generating flapping movements or rippling." Van Ruymbeke at 4, ECF No. 54-7. Accordingly, the Court finds, and Plaintiffs do not dispute, that Van Ruymbeke discloses the "drive" limitation of Claim 31.

the "configured to flex" limitation

As discussed above, the Court construed "configured to flex in response to said drive producing the relative motion, said appendage being configured to flex into a non-planar configuration in response to said drive producing the relative motion" as "configured to bend, in response to the motion produced by said drive, such that the entire appendage is not in a single plane." ECF No. 38 at 32. Acknowledging the Court's construction, Dr. Triantafyllou asserts in his invalidity report his "opinion that Van Ruymbeke discloses an appendage that is configured to flex as recited in Claim 31." Invalidity Report of Dr. Triantafyllou at 13, ECF No. 54-3 (citing Van Ruymbeke Figs. 21-22). Dr. Triantafyllou supports his opinion with a discussion of Figures 21 and 22 of Van Ruymbeke (reproduced below), contending that "Van Ruymbeke teaches that the appendage is configured to flex into a non-planar configuration in response to the motion of the appendage." Id.



Dr. Triantafyllou further explains that "the drive contained in the [Van Ruymbeke] torso moves the front portion of the appendage up and down causing the appendage to have a positive or negative 'curvature,' illustrated by elements 3d and 3d' in the figures." Id. Thus, Dr. Triantafyllou concludes, Van Ruymbeke discloses the "configured to flex" limitation because "the motion produced by the [Van Ruymbeke] drive causes the appendage, fin 3, to bend such that the entire fin is not in a single plane." Id. at 13-14.

Plaintiffs contend that Dr. Triantafyllou's conclusions in his invalidity report are based upon a "misappl[ication of] the Court's claim construction" and an "apparent misunderstanding of the significance of Figures 21 and 22 of the Van Ruymbeke reference," Pls.' Br. in Opp'n at 6, 7, 10, ECF No. 68. Plaintiffs' expert, Mr. Ayton, explains that "Figures 21 and 22 depict two distinct configurations that the device can be placed in prior to its release," rather than "sequential states of the device during operation," as Dr. Triantafyllou's expert report suggests. Rebuttal Invalidity Report of Mr. Ayton at 13-14, ECF No. 68-4.

According to Mr. Ayton, Figures 21 and 22 of Van Ruymbeke simply "show the results obtained by various adjustments to the angular position of the fin beams." Id. He explains that adjusting "handle 54 to the rear," as depicted in Figure 21, "has the effect of bending the front part of the fin 3 towards the top, causing the toy to plunge." Id. Conversely, moving handle 54 "forward," as depicted in Figure 22, "has the effect of bending the front part of the fin 3 towards the bottom, causing the toy to rise." Id. "Accordingly," Mr. Ayton concludes, Figures 21 and 22 "do not depict flexing 'in response to the [cyclical relative] motion [between the appendage and the torso] produced by said drive, such that the entire appendage is not in [a single plane,]' as required by the Court's construction." Id. at 14 (brackets and emphasis in original).

The Court acknowledges Dr. Triantafyllou's "apparent misunderstanding of the significance of Figures 21 and 22 of the Van Ruymbeke reference." Pls.' Br. in Opp'n at 6, 7, 10, ECF No. 68. Notwithstanding such misunderstanding, however, the Court determines that no genuine issue of material fact exists regarding whether Van Ruymbeke discloses the "configured to flex" limitation of Claim 31, such that no "fair-minded jury could return a verdict for [Plaintiffs] on the evidence presented." Anderson, 477 U.S. at 252. As discussed above, Van Ruymbeke discloses "flexible appendage[s]," which are controlled

by mechanisms allowing the figure to "move in the water." Van Ruymbeke at 1, 2, ECF No. 54-7. Such mechanisms - namely, the "oscillatory movement of the levers 19a, 19b" - "communicates reciprocating pivotal movement," which "generat[es] flapping movements or rippling" of the appendages. Id. at 4. As Defendant points out in its reply brief, "[f]ins that 'ripple' must necessarily flex into a non-planar configuration." Def.'s Reply Br. at 9, ECF No. 70. Van Ruymbeke also provides that the "swimming toy according to the invention can move in the water, perfectly imitating the swimming mode of certain fish such as Rays and other fish species of rajids," id. at 2 (emphasis added), which Dr. Triantafyllou describes in his invalidity report, see Invalidity Report of Dr. Triantafyllou at 3, ECF No. 54-3 (observing that "[f]ish and other marine animals flex their body and use fins for propulsion and maneuvering" and "use their tail, flexing or rigid body, and their other fins in an undulatory motion to produce propulsive force" (emphasis added)).

Furthermore, at his June 13, 2014 deposition, Plaintiffs' expert, Mr. Ayton, conceded that (1) "Van Ruymbeke discloses an appendage," Dep. of Mr. Ayton at 362:10-11, ECF No. 70-1, (2) the "appendage in Van Ruymbeke is configured to flex, based on [Mr. Ayton's] own report," id. at 365:6-7, (3) "the invention in Van Ruymbeke contains a drive," which "discloses a relative

motion," id. at 365:20-25, (4) the appendage flexes "in response to a drive producing relative motion," id. at 366:18-21, and (5) the appendage "flexes into a non-planar configuration . . . in response to that drive that produces the relative motion," id. at 367:18:19, 368:1-2. Thus, in the context of the Court's construction of the "configured to flex" limitation, the Court finds that Van Ruymbeke discloses an appendage, "configured to bend, in response to the motion produced by said drive, such that the entire appendage is not in a single plane." ECF No. 38 at 32. Accordingly, because the Court determines that no genuine issue of material fact exists as to any of the limitations contained in independent Claim 31 of the '785 patent, the Court **GRANTS** summary judgment to Defendant as to Claim 31 on the ground that Claim 31 is anticipated by Van Ruymbeke.

ii. Claim 32

Dependent Claim 32 of the '785 patent claims "[t]he figure of [C]laim 31, wherein said torso has an outer surface, the outer surface of the torso defines the cavity." '785 patent at 11:34-35, ECF No. 40-1. The abstract of Van Ruymbeke asserts that "[t]he body (1) of said toy includes an outer shell or skin (2) made from a flexible material . . . and a rigid internal skeleton . . . housed in said shell or skin (2)." Van Ruymbeke at 1, ECF No. 54-7. Van Ruymbeke further explains that the

"swimming toy according to the invention comprises a hollow elongate body," id. at 2, which "further comprises a frame accommodated in the casing or skin 2 and executed in a rigid material," id. at 4. Thus, the Court finds, and Plaintiffs do not dispute, that dependent Claim 32 is anticipated by Van Ruymbeke. Accordingly, because the Court determines that no genuine issue of material fact exists as to Claim 32 of the '785 patent, the Court **GRANTS** summary judgment to Defendant as to Claim 32 on the ground that Claim 32 is anticipated by Van Ruymbeke.

iii. Claim 33

Dependent Claim 33 of the '785 patent claims:

[preamble]

The figure of claim 31, wherein said torso defines an outer surface,

[the "appendage" limitation]

said appendage includes:

a first end coupled to said torso along the outer surface of said torso; and

a second end,

[the "tapered cross-section" limitation]

said appendage having a tapered cross-section, with the first end having a greater thickness than the second end and the second end having a greater flexibility than the first end.

'785 patent at 12:1-10, ECF No. 40-1. Defendant asserts that Plaintiffs, through Mr. Ayton, "raise no genuine issue that would contradict Dr. Triantafyllou's conclusion that [Claim 33]

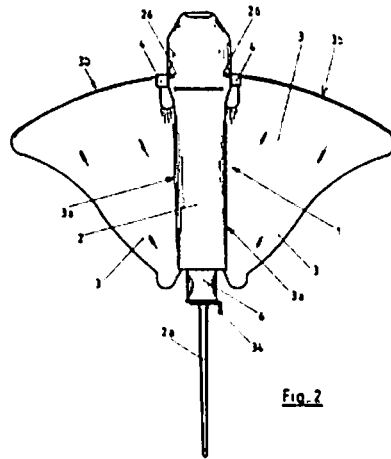
is anticipated by Van Ruymbeke." Def.'s Br. Supp. Mot. for Summ. J. at 21, ECF No. 54. Mr. Ayton contends otherwise, asserting that "Van Ruymbeke does not disclose that the [first end] of the fin [as disclosed by Claim 33] has a greater thickness/reduced flexibility compared to a second end of the fin." Rebuttal Invalidity Report of Mr. Ayton at 14, ECF No. 68-4.

the preamble

The figure of Van Ruymbeke "comprises a hollow body 1 of elongate form having an outer skin or casing 2 made of a flexible material." Van Ruymbeke at 3, ECF No. 54-7. The Court agrees, and Plaintiffs do not dispute, that Van Ruymbeke anticipates the preamble of Claim 33.

the "appendage" limitation

The fins of the Van Ruymbeke figure have two ends that are attached to the torso. Van Ruymbeke explains, and Figure 2 (reproduced below) illustrates, that the "fins affect a generally triangular shape and are attached to the casing 2 in all or almost all of their internal side length 3a." Van Ruymbeke at 3, ECF No. 54-7.

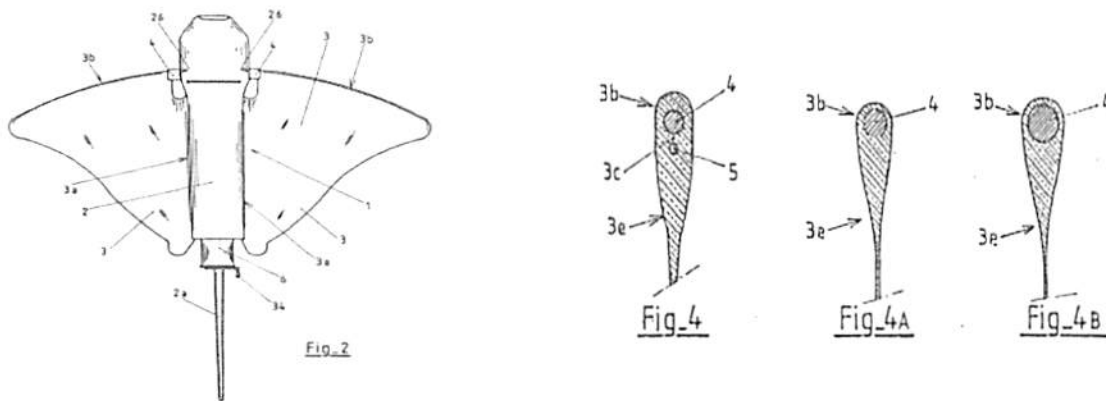


Van Ruymbeke also explains that the fins have a "front edge (3b) [that] is provided with a fin beam (4)," which is "nested or shaped to be fitted into a housing or foot" and "pass[es] through openings 26 reserved in the front of envelope 2." Id. at 2, 4. Although the parties do not agree as to which portion of the Van Ruymbeke appendage corresponds to the "first end" described in Claim 33, the Court agrees, and Plaintiffs do not dispute, that Van Ruymbeke anticipates the "appendage" limitation of Claim 33.

the "tapered cross-section" limitation

Dr. Triantafyllou asserts that Van Ruymbeke discloses the "tapered cross-section" limitation because "Van Ruymbeke explicitly teaches that the first end is thicker and the second end is more flexible." Invalidity Report of Dr. Triantafyllou at 17, ECF No. 54-3. According to Dr. Triantafyllou, the "first end" of Claim 33 corresponds to "[t]he front edge of the fins 3b" of Van Ruymbeke, which "has a larger than the posterior

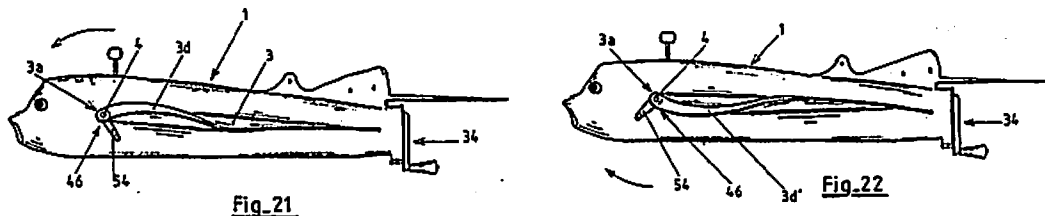
portion remaining third said fin thickness, as can be seen in Figures 4, 4A, 4B," and is "provided with a certain rigidity or a degree of flexibility significantly lower than the remaining third portion of said flexible fins." Van Ruymbeke at 3, ECF No. 54-7. The relevant figures of Van Ruymbeke are reproduced below.



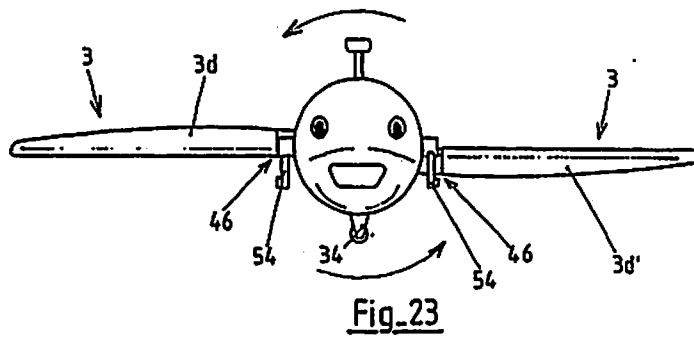
Mr. Ayton disagrees with Dr. Triantafyllou's interpretation, arguing that the "first end" referred to in the "tapered cross-section" limitation is the same "first end" referred to in the "appendage" limitation - "the internal side length 3a that is connected to the torso of the ray." Rebuttal Invalidity Report of Mr. Ayton at 14, ECF No. 68-4. Assuming such interpretation of Claim 33, Mr. Ayton contends, "Van Ruymbeke does not disclose that this portion of the fin has a greater thickness/reduced flexibility compared to a second end of the fin." Id.

Regardless of which portion of the Van Ruymbeke figure

corresponds to the first end of Claim 33 of the '785 patent, the Court finds that Van Ruymbeke anticipates the "tapered cross-section" limitation of Claim 33. With respect to the "first end having a greater thickness than the second end," as described in Claim 33, '785 patent at 12:8, ECF No. 40-1, under Dr. Triantafyllou's interpretation, where the "first end" is delineated by "[t]he front edge of the fins 3b," Van Ruymbeke expressly discloses that the front edge "has a larger than the posterior portion remaining third said fin thickness, as can be seen in Figures 4, 4A, 4B." Van Ruymbeke at 3, ECF No. 54-7. Figures 21 and 22, reproduced below, illustrate that the front edge of the fin has a "greater thickness" than the rear portion of the fin. '785 patent at 12:8, ECF No. 40-1.



Under Mr. Ayton's interpretation, where the "first end" is delineated by "the internal side length 3a that is connected to the torso of the ray," Rebuttal Report of Mr. Ayton at 14, ECF No. 68-4, Figure 23 of Van Ruymbeke, reproduced below, clearly illustrates that the portion of the fin located at the torso has a "greater thickness" than the outer portion of the fin. '785 patent at 12:8, ECF No. 40-1.



With respect to the "second end having a greater flexibility than the first end," as described in Claim 33, id. at 12:9-10, under Dr. Triantafyllou's interpretation, Van Ruymbeke expressly discloses that the front edge "is provided with a certain rigidity or a degree of flexibility significantly lower than the remaining third portion of said flexible fins." Van Ruymbeke at 3, ECF No. 54-7. Assuming Mr. Ayton's interpretation, although the entire "outer surface of the fins 3 is disclosed as being formed from a flexible material," the "triangular fins are bounded on two of their sides by a rigid attachment, limiting their ability to flex." Rebuttal Report of Mr. Ayton at 13, ECF No. 68-4 (emphasis added). Consequently, such limited flexibility where the appendage is attached at the torso, combined with the flexibility of the material forming the fins, suggests that the outer portion of the fins "hav[e] a greater flexibility" than the portion of the fin at the torso. '785 patent at 12:9-10, ECF No. 40-1. Thus, regardless of whether the "first end" described in Claim 33 of the '785 patent

corresponds to the "front edge of the fins 3b," as Dr. Triantafyllou opines, or the "internal side length 3a," as Mr. Ayton asserts, the Court finds that the "tapered cross-section" limitation of Claim 33 is anticipated by Van Ruymbeke. Accordingly, because the Court determines that no genuine issue of material fact exists as to any of the limitations contained in Claim 33 of the '785 patent, the Court **GRANTS** summary judgment to Defendant as to Claim 33 on the ground that it is anticipated by Van Ruymbeke.

iv. Claim 34

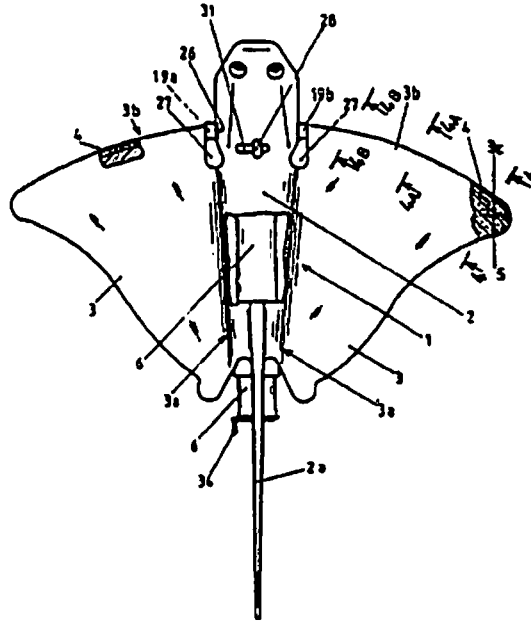
Claim 34 of the '785 patent discloses:

The figure of claim 31, wherein the cyclical relative motion is a reciprocating pivotal motion, when the drive produces the reciprocating pivotal motion, said appendage flexes in a direction opposite to that of the motion of said appendage during at least a portion of the reciprocating pivotal motion, the flex of the appendage and the reciprocating pivotal motion cause said appendage to have a wave-like, whipping motion.

'785 patent at 12:11-18, ECF No. 40-1. Defendant asserts that Mr. Ayton's analysis of Claim 34 in his rebuttal invalidity report "focuses on [the Van Ruymbeke] steering mechanism that . . . has no real relevance to any limitation of [C]laim 34." Def.'s Br. Supp. Mot. for Summ. J. at 22, ECF No. 54. Plaintiffs advance no argument in their responsive brief regarding Claim 34, but point to Mr. Ayton's invalidity report, which asserts that "Van Ruymbeke fails to disclose each and

every limitation of [Claim 34] for at least the reasons described above in connection with Claim 31." Rebuttal Invalidity Report of Mr. Ayton at 14, ECF No. 68-4. In addition, Mr. Ayton disputes Dr. Triantafyllou's interpretation of Van Ruymbeke's "Figures 21 and 22" as depicting "sequential states of the device during operation," thus "disclos[ing] a 'wave-like, whipping motion,'" id. at 16, as Dr. Triantafyllou contended in his invalidity report, see Invalidity Report of Dr. Triantafyllou at 18, ECF No. 54-3 ("As shown in Figures 21-22, this motion causes the appendage to have a wave-like, whipping motion.").

Van Ruymbeke discloses an "actuating mechanism" that is "driven by a drive device housed in [the] hollow body and providing the driving force." Van Ruymbeke at 2, ECF No. 54-7. The actuating mechanism "is used to communicate the same reciprocating pivoting [of] the rocker arm 19a, 19b," as seen in Figure 1, reproduced below. Id. at 4. According to Van Ruymbeke, "[i]t is understood that the oscillatory movement of the levers 19a, 19b communicates reciprocating pivotal movement of the beams fin 4, in a plane perpendicular to the longitudinal axis of the toy, the alternative pivot generating flapping movements or rippling." Id.



At his June 13, 2014 deposition, Mr. Ayton agreed that the "flapping" described in Van Ruymbeke is "a pivotal motion." Dep. Tr. of Mr. Ayton at 386:25-387:7, ECF No. 70-1. Mr. Ayton also admitted that "the flapping back and forth" is "what [he] would consider, as an engineer, a cyclical motion." Id. at 387:11-14. Thus, Mr. Ayton conceded, Van Ruymbeke discloses a "cyclical relative motion [that] is a reciprocating pivotal motion." Id. at 387:17-24. Mr. Ayton also "agree[d] that Van Ruymbeke discloses or exhibits a drive that produces a reciprocating pivotal motion" and that the Van Ruymbeke "appendage flexes in a direction opposite to that of the motion of said appendage during at least a portion of the reciprocating pivotal motion." Id. at 388:5-17. Mr. Ayton also "agree[d] that that flexing of the appendage and the reciprocating pivotal motion caused said appendage to have a wave-like whipping

motion.” Id. at 389:21-25.

Mr. Ayton’s only dispute regarding Claim 34 was with respect to the phrase “cause[] said appendage to have a wave-like whipping motion,” which the Court previously construed as “cause[] said appendage to move in a whipping fashion such that a portion of the appendage lags behind the movement of another portion of the appendage that is closer to the torso.” Id. at 390:17-20, 391:14-19. Mr. Ayton asserted that Van Ruymbeke discloses “waves [that] are operated in a longitudinal fashion rather than the lateral fashion, which would be the case if they were to be coming closer to the torso.” Id. at 391:20-23.

At the July 15, 2014 hearing, Plaintiffs conceded that the “flapping” in Van Ruymbeke was not necessarily “different than whipping,” as described in Claim 34, but asserted that “the anchoring of the wing along the length changes you know how it, how it flaps.” Plaintiff explained that the Van Ruymbeke fin is “not a tail that’s anchored at one point and allowed to freely flex back and forth, it’s a wing anchored along an entire length with a rigid member across the side, and only the front portion is flapped.” However, Plaintiffs also conceded that the tail in the ‘785 patent whips “because it’s flexible,” and Van Ruymbeke clearly discloses that the Van Ruymbeke figure is “made of a flexible material,” Van Ruymbeke at 2, ECF No. 54-7. Moreover, Van Ruymbeke expressly discloses that the swimming toy “ripples”

its fins "like the fish of the family rajids like rays," id. at 1, "perfectly imitating the swimming mode of certain fish such as Rays and other fish species of rajids," id. at 2 (emphasis added). Thus, the Court finds that Claim 34 is anticipated by Van Ruymbeke. Accordingly, because the Court determines that no genuine issue of material fact exists as to any of the limitations contained in Claim 34 of the '785 patent, the Court **GRANTS** summary judgment to Defendant as to Claim 34 on the ground that it is anticipated by Van Ruymbeke.

b. Obviousness over Claims 35 and 38

Curiously, neither Defendant nor Plaintiffs included in their briefs any discussion of the Graham factors, although the Court's obviousness inquiry "requires analysis under the four Graham factors." Siemens Med. Solutions USA, Inc. v. Saint-Gobain Ceramics & Plastics, Inc., 637 F.3d 1269 (Fed. Cir. 2011) (citing Graham, 383 U.S. at 17-18). Although the Court is not required to scour the record in search of evidence [relevant to] a motion for summary judgment," Ritchie v. Glidden Co., 242 F.3d 713, 723 (7th Cir. 2001)), the Court will nonetheless conduct its analysis of the Graham factors, considering all relevant evidence the Court can readily ascertain from the record. Cf. United States v. Dunkel, 927 F.2d 955, 956 (7th Cir. 1991) ("Judges are not like pigs, hunting for truffles buried in" the record.).

i. Claim 35

Claim 35 of the '785 patent discloses "[t]he figure of claim 31, wherein said torso simulates a torso of a fish, and said appendage simulates a tail of a fish." '785 patent at 12:19-20, ECF No. 40-1. Defendant asserts that dependent Claim 35 is obvious in light of the prior art references.⁴ The experts do not dispute that Van Ruymbeke discloses a "torso [that] simulates a torso of a fish." Id.; see Invalidity Report of Dr. Triantafyllou at 19, ECF No. 54-3 (asserting that "Van Ruymbeke teaches a figure where the torso simulates a fish torso"); Dep. Tr. of Mr. Ayton at 415:7-8, 415:13-14, ECF No. 70-1 (agreeing that "the invention in Van Ruymbeke . . . depicts a fish" and "that the Van Ruymbeke torso simulates a torso of a fish"). Thus, the sole obviousness issue to be determined with respect to Van Ruymbeke and Claim 35 is whether the appendage claimed in Claim 35, simulating the tail of a fish, would have been obvious to a person of ordinary skill in the art, at the time of the invention, based upon the fins described and depicted in Van

⁴ In two headings of its initial brief, Defendant also asserts that "Independent Claim 31 is Anticipated or Obvious In Light of the Prior Art," and that "Dependent Claims 32-35 and 38 are Anticipated or Obvious In Light of the Prior Art." Def.'s Br. Supp. Mot. for Summ. J. at 15, 20, ECF No. 54 (emphasis added). However, Defendant fails to present any obviousness argument regarding Claims 31-34, presumably relying on Dr. Triantafyllou's conclusions in his expert report, which asserts only that Claims 35 and 38 are obvious over prior art. See Invalidity Report of Dr. Triantafyllou at 2, 10, 19-20, 28, 37, ECF No. 54-3. At the July 15, 2014 hearing, Plaintiffs represented that they "are not going to dispute the obviousness on Claim 38 at trial."

Ruymbeke or upon a combination of the prior art references.

Dr. Triantafyllou asserts "that it would be obvious to one of ordinary skill in the art that the flexible appendages taught [by] Van Ruymbeke could also be used [as] the tail of a fish." Invalidity Report of Dr. Triantafyllou at 19. Specifically, Dr. Triantafyllou asserts that "one of ordinary skill would understand that the drive mechanism of Van Ruymbeke could be readily altered such that the appendage would function as a tail rather than side fin." Id. at 19-20. Mr. Ayton disagrees, arguing that, because "[t]he flapping side fins of the Van Ruymbeke device operate in a fundamentally different manner than the tail of a fish," "[i]t would not have been obvious to apply the teachings of Van Ruymbeke to create an appendage that simulates a fish tail." Rebuttal Invalidity Report of Mr. Ayton at 15, ECF No. 68-4.

Scope and Content of the Prior Art

The scope of prior art includes "references that are within the field of the inventor's endeavor," as well as "analogous art [that] a person of ordinary skill would reasonably have consulted . . . and applied . . . in seeking a solution to the problem that the inventor was attempting to solve." Heidelberger Druckmaschinen AG v. Hantscho Commercial Prods., 21 F.3d 1068, 1071 (Fed. Cir. 1994). Plaintiffs do not dispute that Van Ruymbeke is within the scope of prior art within the

meaning of 35 U.S.C. § 102, see Pls.' Br. in Opp'n at 2, ECF No. 68 (acknowledging that Defendant's expert "identified a number of references in his report that are prior art to the '785 patent"); Final Pretrial Order ¶ 16, ECF No. 87 (stipulating to Van Ruymbeke as a prior art reference). Nor do Plaintiffs dispute the content of Van Ruymbeke, which the Court has discussed at length with respect to anticipation of the asserted claims by Van Ruymbeke, although Mr. Ayton vigorously disputes some of Dr. Triantafyllou's conclusions drawn from Van Ruymbeke. Thus, the Court finds no genuine dispute of material fact with respect to the first Graham factor.

Level of Ordinary Skill in the Art

The second Graham factor requires a consideration of the level of ordinary skill in the art, as the obviousness inquiry is conducted from the perspective of a person of such skill. Relevant factors in determining the level of ordinary skill in the art include: "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field." Daiichi Sankyo Co., Ltd. v. Apotex, Inc., 501 F.3d 1254, 1256 (Fed. Cir. 2007) (quoting Envtl. Designs, Ltd. v. Union Oil Co., 713 F.2d 693, 696 (Fed. Cir. 1983)).

Although the parties disagree as to the proper level of ordinary skill in the art, neither party presents any discussion regarding such level of skill, presumably relying on the opinions of the experts in their invalidity reports. Dr. Triantafyllou asserts that the proper level of ordinary skill in the art is possessed by a person "in the field of Ocean Engineering or Mechanical Engineering with a 4-year Bachelor's Degree or equivalent industrial experience." Invalidity Report of Dr. Triantafyllou at 2, ECF No. 54-3. Mr. Ayton asserts that the proper level of ordinary skill in the art is "at least 2 years' experience in designing mechanical toys" or "a Bachelor's degree in Mechanical Engineering or similar discipline." Rebuttal Invalidity Report of Mr. Ayton at 3, ECF No. 68-4.⁵ Neither expert provides the basis for his conclusion, but Mr. Ayton proffers that his "conclusions in this report are the same regardless of which party's description of the level of ordinary skill in the art" the Court employs. Id. at 4.⁶ At the July 15,

⁵ At his deposition, Mr. Ayton indicated that, although his opinion in his report indicates two years of experience in designing mechanical toys or a bachelor's degree, "that probably should have said 'in addition to.'" Dep. Tr. of Ian Ayton at 225:25-226:5, ECF No. 70-1. However, Mr. Ayton declined to change his opinion as to the level of ordinary skill in the art because his answers during the deposition did not "reveal[] what [he] really feels about this." Id. at 227:3-4.

⁶ Dr. Triantafyllou asserts his opinion regarding the proper level of ordinary skill in the art with no discussion whatsoever. See Invalidity Report of Dr. Triantafyllou at 2, ECF No. 54-3. Plaintiffs identify six "[f]actors that can be considered in determining the

2014 summary judgment motion hearing, Defendant asserted that, although its position was that it would require "a person of at least four years experience in terms of mechanical engineering having that degree, to be able to determine these issues, particularly infringement," the Court "could still resolve [the invalidity issues] under [Plaintiffs'] standard." Thus, because it appears that the obviousness opinions of the experts would remain the same, regardless of which level of skill in the art the Court adopts, the Court finds no genuine dispute of material fact with respect to the second Graham factor. However, drawing "all justifiable inferences" in the light most favorable to Plaintiffs, the non-moving party, Anderson, 477 U.S. at 255, the Court assumes, for the purposes of the instant summary judgment motion, that the level of ordinary skill in the art is the one advanced by Mr. Ayton - "at least 2 years' experience in designing mechanical toys" or "a Bachelor's degree in Mechanical Engineering or similar discipline," Rebuttal Invalidity Report of Mr. Ayton at 3, ECF No. 68-4. See Karsten Mfg. Corp. v. Cleveland Golf Co., 242 F.3d 1376, 1384-85 (Fed. Cir. 2001) ("The issue of obviousness may be decided on motion for summary judgment when the underlying facts are not in dispute, or when the movant must prevail even if disputed facts and inferences

level of ordinary skill in the art," Rebuttal Invalidity Report of Mr. Ayton at 4, ECF No. 68-4, but presents no discussion regarding any of those factors.

therefrom are resolved in favor of the non-movant.”).

Differences between Claimed Invention and Van Ruymbeke

As discussed above, independent Claim 31 is invalid as anticipated by Van Ruymbeke. In other words, Van Ruymbeke discloses all of the elements claimed in the independent claim underlying dependent Claim 35. Furthermore, the parties do not dispute that Van Ruymbeke discloses a “torso [that] simulates a torso of a fish.” ’785 patent at 12:19-20, ECF No. 40-1. Thus, the only difference relevant to the obviousness inquiry with respect to Claim 35 is that the invention claimed in Claim 35 discloses an appendage that “simulates a tail of a fish,” *id.*, while the invention claimed in Van Ruymbeke discloses appendages that simulate the “side fins” of a fish, Van Ruymbeke at 1, ECF No. 54-7.

Objective Indicia of Nonobviousness

Plaintiffs have presented no evidence in their responsive brief regarding the fourth Graham factor, although they indicated at the July 15, 2014 summary judgment hearing that they “intend at trial to present evidence of the commercial success of [their] product,” which “would go to secondary considerations.” Plaintiffs did represent, however, that they “don’t think [Defendant has] put forth the analysis to show that they’re entitled to summary judgment of obviousness.” *Id.* Thus, the Court finds no genuine dispute of material fact with

respect to the fourth Graham factor.

Evaluation of Graham Factors

The Graham factors establish by clear and convincing evidence that Claim 35 is rendered obvious by Van Ruymbeke. As discussed above, the parties do not dispute the scope or the content of Van Ruymbeke, which discloses a "swimming toy" that is "formed integrally with two lateral fins 3 soft, large, like the pectoral fins of [the] fish order rajids like rays." Van Ruymbeke at 3, ECF No. 54-7. "[T]he alternative pivot [of the beams fin 4] generat[es] flapping movements or rippling," the "fins providing propelling [of] said toy in water," "perfectly imitating the swimming mode of certain fish." Id. at 2, 4.

Although Van Ruymbeke does not expressly disclose an appendage that simulates the tail of a fish, the Court finds that, using the "logic, judgment, and common sense available to the person of ordinary skill," Perfect Web Techs., 587 F.3d at 1329, such person would find it obvious to apply the teachings of Van Ruymbeke to the tail fin of a fish. Indeed, as Mr. Ayton agreed at his June 13, 2014 deposition, the ray depicted in Van Ruymbeke "is a fish," Dep. Tr. of Mr. Ayton at 415:6-11, ECF No. 70-1, "the Van Ruymbeke fish has fins," id. at 415:18-19, and "the tail of a fish is a fin," id. at 416:17-19. Moreover, as Mr. Ayton observed, both the fins of a ray and the tail of a fish "propel their respective creature . . . through the water,"

although the "tail of a fish . . . [has] [o]nly sort of like one half a cycle of rolling motion; whereas, there are . . . multiple cycles of rolling motion associated with a fin." Id. at 420:3-421:16.

Alternatively, even if Claim 35 were not obvious in light of Van Ruymbeke alone, it is certainly rendered obvious by Van Ruymbeke in light of the Yamamoto patent (discussed in greater detail below), which the parties agree is a prior art reference to the '785 patent. See OddzOn Prods., Inc. v. Just Toys, Inc., 122 F.3d 1396, 1402 (Fed. Cir. 1997) (defining prior art as "knowledge that is available, including what would be obvious from it, at a given time, to a person of ordinary skill in the art" (emphasis added) (quoting Kimberly-Clark Corp. v. Johnson & Johnson, 745 F.2d 1437, 1453 (Fed. Cir. 1984))). The abstract of Yamamoto describes a "submersible vehicle . . . having swinging wings," which "swing in a flexible manner like the tail fin of a fish, thereby producing a desired propelling force and performing a steering operation." Yamamoto at 1, ECF No. 54-8 (emphasis added). Figure 2 of Yamamoto, reproduced below, illustrates such "swinging wings." Id.

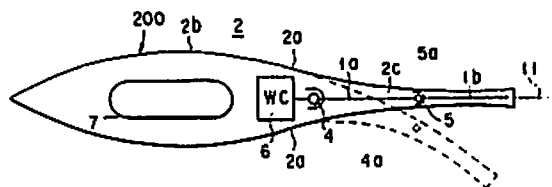


FIG. 2

Yamamoto also explains that the swinging wings can be "arranged on the side of the main body, . . . work[ing] like pectoral fins of a fish and thus permit[ting] the vehicle to change in underwater position." Id. at 6:58-61 (emphasis added). Figure 6 of Yamamoto, reproduced below, illustrates this alternative embodiment.

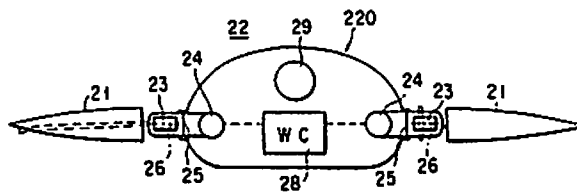


FIG. 6

Thus, the Court finds that "a person of ordinary skill in the art," in possession of the "knowledge that [was] available" from Yamamoto at the time of the '785 patent, OddzOn Prods., 122 F.3d at 1402, would have found it obvious that the Van Ruymbeke figure could be modified to display an appendage that would "swing in a flexible manner like the tail fin of a fish," Yamamoto at 1, ECF No. 54-8.

The Court also determines that Claim 35 would have been rendered obvious by Van Ruymbeke in light of the Hirata article (discussed in greater detail below), which the parties agree is a prior art reference to the '785 patent. Hirata, an article discussing the "turning modes" of fish, notes that "real fish turn skillfully using not only tail fin but also pectoral fins

or ventral fins." Hirata at 1, ECF No. 54-12. Thus, the Court finds that "a person of ordinary skill in the art," possessing the "knowledge that is available" in Hirata at the time of the '785 patent, OddzOn Prods., 122 F.3d at 1402, would have found it obvious that the Van Ruymbeke figure could be modified to be maneuvered by "pectoral fins." Hirata at 1, ECF No. 54-12.

Accordingly, because "the content of the prior art, the scope of the patent claim, and the level of ordinary skill in the art are not in material dispute, and the obviousness of the claim is apparent in light of these factors," Wyers, 616 F.3d at 1239 (quoting KSR Int'l, 550 U.S. at 427), the Court **GRANTS** summary judgment to Defendant as to Claim 35 on the ground that it is rendered obvious by Van Ruymbeke or, alternatively, Van Ruymbeke in light of Yamamoto or, alternatively, Van Ruymbeke in light of Hirata.

ii. Claim 38

Claim 38 of the '785 patent discloses "[t]he figure of claim 31, wherein the figure is configured to be substantially neutrally buoyant." '785 patent at 12:27-28, ECF No. 40-1. Dr. Triantafyllou asserted in his invalidity report that, at the time the '785 patent was filed, "it was well known that aquatic figures could be made neutrally buoyant." Invalidity Report of Dr. Triantafyllou at 20, ECF No. 54-3. Dr. Triantafyllou points out that even the '785 patent itself "provides no teaching of

how the toy fish would be configured to be 'substantially neutrally buoyant,'" because "[o]ne of ordinary skill in the art would have recognized the advantages of making the figure of Van Ruymbeke neutrally buoyant and would have readily understood how to do so." Id. at 21.

The Court now conducts an obviousness inquiry regarding Claim 38, considering the evidence, as it must, in light of the four Graham factors. Siemens Med. Solutions, 637 F.3d 1269. As discussed above, there is no genuine dispute of material fact with respect to the first Graham factor, the scope and content of the prior art. Regarding the second Graham factor, the Court assumes, for the purposes of this motion, the level of ordinary skill in the art advanced by Plaintiffs through Mr. Ayton. Considering the third Graham factor, the differences between the claimed invention and the Van Ruymbeke figure, the only difference relevant to the obviousness inquiry is that the figure claimed in Claim 38 is "configured to be substantially neutrally buoyant," '785 patent at 12:27-28, ECF No. 40-1, whereas the Van Ruymbeke figure does not expressly disclose such "substantially neutral[] buoyan[ce]," id. And, as indicated above, Plaintiffs present no objective indicia of nonobviousness, the fourth Graham factor.

Moreover, neither Plaintiffs nor Mr. Ayton offer any evidence to rebut Dr. Triantafyllou's opinion and, at the July

15, 2014 summary judgment hearing, Plaintiffs represented that they would not dispute at trial the obviousness of Claim 38 with respect to Van Ruymbeke. Accordingly, because "the content of the prior art, the scope of the patent claim, and the level of ordinary skill in the art are not in material dispute, and the obviousness of the claim is apparent in light of these factors," Wyers, 616 F.3d at 1239 (quoting KSR Int'l, 550 U.S. at 427), the Court **GRANTS** summary judgment to Defendant as to Claim 38 on the ground that it is rendered obvious by Van Ruymbeke.

Although the Court has determined that Van Ruymbeke anticipates Claims 31, 32, 33, and 34, that Claim 35 is rendered obvious by Van Ruymbeke, alone or in light of Yamamoto or Hirata, and that Claim 38 is rendered obvious by Van Ruymbeke, the Court will nonetheless briefly address whether the remaining prior art references anticipate any of the asserted claims, in order to provide a complete analysis to the parties, as well as to any appellate court that may consider this case in the future.

2. Yamamoto

The Yamamoto reference is identified as "U.S. Patent No. 6,089,178 to Yamamoto (issued July 18, 2000) ('Yamamoto')." Invalidity Report of Dr. Triantafyllou at 21, ECF No. 54-3. Yamamoto pertains to a "submersible vehicle having swinging wings." Yamamoto at 1, ECF No. 54-8. For purposes of

background, the Yamamoto abstract reads as follows:

A submersible vehicle is a type having swinging wings. The vehicle is provided with a vehicle main body, a plurality of swinging wings provided for the main body and arranged in series, rotatable shafts located at front edges of the swinging wings, respectively, actuators for driving the shafts independently of one another, and a wing controller for controlling the actuators in such a manner that the wings enable to swing in a flexible manner like the tail fin of a fish, thereby producing a desired propelling force and performing a steering operation.

Id. According to Yamamoto's specification, "an object of the present invention is to provide a submersible vehicle which can be not only moved forward or backward but also steered by oscillating or swinging the wings in such a manner that they move like the fins of a fish." Id. at 1:26-30.

a. Anticipation of Claims 31-38

In its motion for summary judgment, Defendant contends that, based on Dr. Triantafyllou's invalidity report, Yamamoto anticipates all of the asserted claims of the '785 patent. See Def.'s Br. Supp. Mot. for Summ. J. at 19-20, 21-23, ECF No. 54. Plaintiffs disagree, pointing to Mr. Ayton's rebuttal invalidity report. See Pls.' Br. in Opp'n at 11, ECF No. 68.

i. Claim 31 - the "configured to flex" limitation

The only limitation of Claim 31 disputed by the parties is the "configured to flex" limitation. See Dep. Tr. of Mr. Ayton at 352:2-6, ECF No. 70-1. However, Dr. Triantafyllou's opinion that Yamamoto discloses the "configured to flex" limitation of

Claim 31 appears to rely upon his incorrect, overly broad, reading of the "configured to flex" limitation, as previously discussed. Dr. Triantafyllou asserts that, "[a]ccording to the Court's claim construction, this element requires that the appendage be 'configured to bend, in response to the motion produced by said drive, such that the entire appendage is not in a single plane.'" Id. at 23. Citing Figure 2 of Yamamoto, reproduced below, Dr. Triantafyllou concludes that "the drive motion causes the appendage to bend such that it is not in a single plane," id., although he makes no assertion that the motion produced by the Yamamoto drive is a "cyclical relative motion between the appendage and the torso produced by said drive," Rebuttal Invalidity Report of Mr. Ayton at 17, ECF No. 68-4 (brackets and emphasis omitted). Defendant sums up its argument this way: "The drive moves; the tail flexes - it is as simple as that." Def.'s Reply Br. at 7, ECF No. 70.

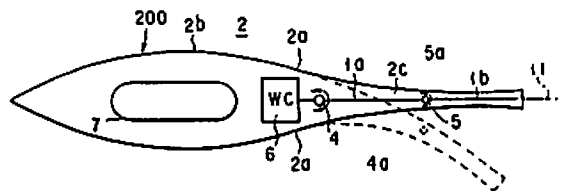


FIG. 2

Plaintiffs argue that Yamamoto fails to disclose the "configured to flex" limitation found in Claim 31 because "the forced flexing of the tails [in Yamamoto] does not occur in response to the motion produced by the drive, as required by the

Court's claim construction." Pl.'s Br. in Opp'n at 11, ECF No. 68 (emphasis in original). Mr. Ayton explains that "[t]he Yamamoto fish uses a segmented tail with two pivotally-connected wings that are driven into a bent configuration by the operation of two separate actuators." Rebuttal Invalidity Report of Mr. Ayton at 18, ECF No. 68-4 (emphasis in original). According to Mr. Ayton, the "Yamamoto fish thus operates in a fundamentally different manner than that of the claimed invention." Id.

Although Yamamoto does appear to disclose some of the elements of independent Claim 31, it is not clear that Yamamoto discloses Claim 31's "configured to flex" limitation. With respect to Figure 2, Yamamoto explains that "the tail portion of the main body" houses "two wings (swinging wings) 1a and 1b." Yamamoto at 4:1-2, ECF No. 54-8. Yamamoto also refers to Figure 3, reproduced below, which clearly depicts the "two wings" 1a and 1b of Figure 2. Id.

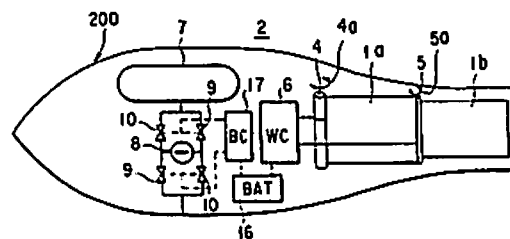


FIG. 3

In describing the motion of wings 1a and 1b of Figure 2, Yamamoto explains that a "rotating shaft 4 is arranged at the forward end of the swinging wing 1a, so as to oscillate (or

swing) the swinging wing 1a. . . . Another rotating shaft 5 is arranged at the forward end of the swinging wing 1b . . . , so as to oscillate (or swing) the swinging wing 1b." Id. at 4:3-10. In other words, "the wings 1a and 1b cooperate with one another." Id. at 6:50-51. However, Yamamoto does not appear to describe any relative motion between the swinging wings and the figure's torso, nor does Dr. Triantafyllou assert that any such relative motion is "inherent" in the motion described by Yamamoto. See In re Cruciferous Sprout Litig., 301 F.3d 1343, 1349 (Fed. Cir. 2002) ("Under the principles of inherency, if the prior art necessarily functions in accordance with, or includes, the claimed limitations, it anticipates." (citations and internal quotation marks omitted)). Thus, the Court cannot determine at this stage of the litigation that no "fair-minded jury could return a verdict for [Plaintiffs] on the evidence presented." Anderson, 477 U.S. at 252. Accordingly, because the Court determines that a genuine dispute of material fact exists as to whether Yamamoto anticipates Claim 31 of the '785 patent, Defendant is not entitled to summary judgment based on its argument that independent Claim 31 of the '785 patent is anticipated by Yamamoto.

ii. Claims 32-38

Because the Court finds that genuine issues of material fact exist regarding whether independent Claim 31 is anticipated

by Yamamoto, Defendant is likewise not entitled to summary judgment of invalidity with respect to dependent Claims 32, 33, 34, 35, or 38 of the '785 patent, as those claims are dependent upon independent Claim 31. See RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1446 (Fed. Cir. 1984) (holding that dependent claim "cannot be anticipated" where the independent claim "is not anticipated").

3. Triantafyllou '750

The Triantafyllou '750 reference is identified as "U.S. Patent No. 5,740,750 to Triantafyllou et al. (issued April 28, 1998) ('Triantafyllou '750')." Invalidity Report of Dr. Triantafyllou at 28, ECF No. 54-3. Triantafyllou '750 pertains to a "method and apparatus for reducing drag on a moving body." Triantafyllou '750 at 1, ECF No. 54-11. For purposes of background, the Triantafyllou '750 abstract reads as follows:

A method and apparatus for providing reduced drag on a body moving in a direction D through a selected fluid medium at a speed U which is normally sufficient to cause turbulence. Reduced drag is generally accomplished by flexing at least the outer surface of at least the rear third of the body to produce a wave-like motion of the body having a wavelength of between 0.5 and 2.0 times the length of the body, a reduced frequency value Ω between 0.1 and 0.5 and a time delay between successive points on the body reaching peaks for their flex motion which is directly proportional to the distance x_i in the direction D of the point from a reference point on the body and inversely proportional to the phase speed c_p of the wave. A variety of techniques are described for achieving the desired wave-like motion.

Triantafyllou '750 at 1. Triantafyllou '750 asserts that the claimed "invention reduces drag on a body moving through a fluid medium . . . in much the same way that this objective is accomplished by a swimming fish; namely by active control of lateral body flexing." Id. at 2:32-36.

a. Anticipation of Claims 31-35

In its motion for summary judgment, Defendant contends that Triantafyllou '750 anticipates Claims 31-35 of the '785 patent. See Def.'s Br. Supp. Mot. for Summ. J. at 19-20, 21-23, ECF No. 54. Plaintiffs disagree, pointing to the opinions advanced by Mr. Ayton in his rebuttal invalidity report. See Pls.' Br. in Opp'n at 11, ECF No. 68.

i. Claim 31 - the "configured to flex" limitation

The only limitation of Claim 31 disputed by the parties is the "configured to flex" limitation. See Dep. Tr. of Mr. Ayton at 352:2-6, ECF No. 70-1. However, as with Yamamoto, Dr. Triantafyllou's conclusion hinges upon his broad reading of the "configured to flex" limitation, asserting that "the drive motion in [Triantafyllou '750] causes the appendage to bend such that it is not in a single plane," but failing to assert that Triantafyllou '750's "drive motion" is a cyclical relative motion between the appendage and the torso of the Triantafyllou '750 figure. Dr. Triantafyllou cites Figures 1, 6A, and 6B of Triantafyllou '750, reproduced below, in support of his

conclusion that Triantafyllou '750 discloses the "configured to flex" limitation.

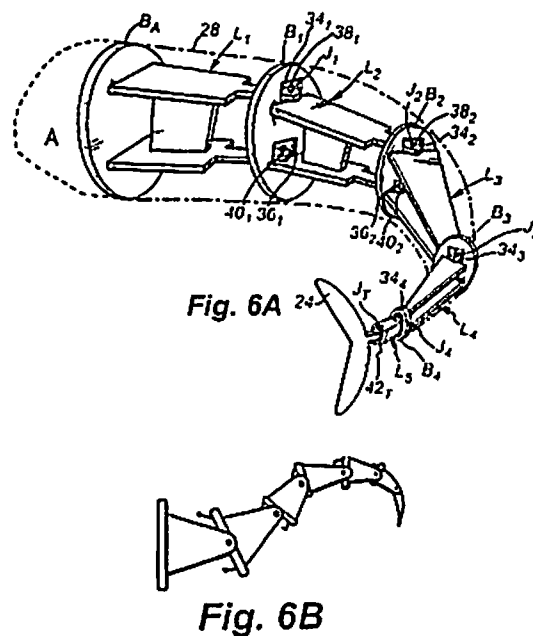
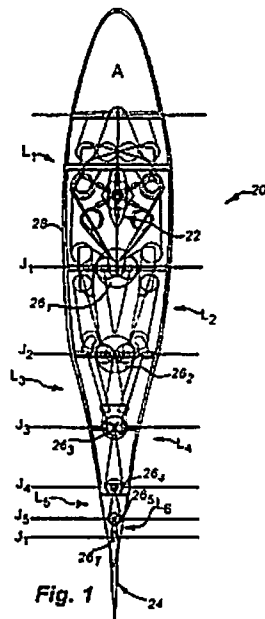


Figure 1 of Triantafyllou '750 depicts a "body 20 [that] is divided into six sections or links L_1 - L_6 , plus a rigid front cone section A." Id. at 5:12-14. "There are six motors, one for each of the joints J_1 - J_T ," which "cause flexing of [the] joints." Id. at 5:17-20. Specifically, the joints "are rotated or flexed to impart a wave-like motion to the rear portion of the body 20." Id. at 5:28-29. "Figs. 6A and 6B are a side perspective view and a top view, respectively, for a particular species of the embodiment of Fig. 5," which is a "simplified diagram for an embodiment . . . generally of the type shown in Fig. 1." Id. at 4:14-19.

Plaintiffs dispute that Triantafyllou '750 satisfies the "configured to flex" limitation of Claim 31 for the same reasons as discussed regarding Yamamoto, again referring to Mr. Ayton's rebuttal invalidity report. Mr. Ayton asserts that the "Triantafyllou '750 device uses a segmented tail that is driven into a bent configuration by the operation of six separate motors operating on six joints." Rebuttal Invalidity Report of Mr. Ayton at 21, ECF No. 68-4. Mr. Ayton concludes that the "Triantafyllou '750 device thus operates in a fundamentally different manner than that of the claimed invention" in Claim 31 of the '785 patent. Id. at 21-22.

The Court cannot determine at this stage of the litigation that no "fair-minded jury could return a verdict for [Plaintiffs] on the evidence presented." Anderson, 477 U.S. at 252. Although Triantafyllou '750 explains that the joints "are rotated or flexed to impart a wave-like motion to the rear portion of the body 20," Triantafyllou '750 at 5:28-29, a jury could reasonably conclude that such motion, as described in Triantafyllou '750, is significantly different from the relative motion described in Claim 31 of the '785 patent. Compare '785 patent at 26-27, ECF No. 40-1 (claiming drive that produces "cyclical relative motion between said appendage and said torso," causing appendage "to flex into a non-planar configuration" (emphasis added)), with Triantafyllou '750 at

10:60-63, ECF No. 54-11 (claiming "method . . . wherein all of said sections are connected to flex relative to each section adjacent thereto" (emphasis added)); id. at 11:30-32 (claiming "body . . . wherein at least the sections in the rear third of said body are connected to flex relative to each other" (emphasis added)). Accordingly, because the Court determines that a genuine dispute of material fact exists as to whether Triantafyllou '750 anticipates Claim 31 of the '785 patent, Defendant is not entitled to summary judgment based on its argument that independent Claim 31 of the '785 patent is anticipated by Triantafyllou '750.

ii. Claims 32-35

Because the Court finds that genuine issues of material fact exist regarding whether independent Claim 31 is anticipated by Triantafyllou '750, Defendant is likewise not entitled to summary judgment of invalidity with respect to dependent Claims 32, 33, 34, or 35 of the '785 patent, as those claims are dependent upon independent Claim 31. See RCA Corp., 730 F.2d at 1446.

b. Obviousness over Claim 38

Plaintiffs asserted at the July 15, 2014 summary judgment hearing that there was no dispute as to the obviousness of Claim 38 as to Van Ruymbeke. Thus, especially in light of the fact that the parties did not include any analysis of the Graham

factors in their briefs, the Court declines to conduct an obviousness analysis of Claim 38 with respect to Triantafyllou '750.

4. Hirata

The Hirata reference is identified as an article written by Koichi Hirata, et al., entitled "'Study on Turning Performance of a Fish Robot,' Proc. of 1st Int. Sym. On Aqua Bio-Mechanisms, pp. 287-292, 2000 ('Hirata')." Invalidity Report of Dr. Triantafyllou at 37, ECF No. 54-3. Hirata explains that "[u]nderwater robots are widely used in the fields of ocean development, ocean investigation and marine environmental protection," and that such robots "need higher efficient of propulsive performance and good dynamics performance." Hirata at 1, ECF No. 54-12. Hirata includes a "discuss[ion about] turning modes for the fish robot that uses only tail swing," as well as "a small prototype fish robot" that was developed "[b]ased on the discussion." Id.

Hirata describes "three turning modes" that can be achieved "with only swing of tail fin." Id. First, "[t]he fish robot swings its tail only to one side during a turning." Id. at 2. Second, "the fish robot swims straight, and gets kinetic energy. Next, the fish robot turns its tail to one side, and keeps the posture to the side," then "[t]urns by hydrodynamics force." Id. Third, "[t]he fish robot swings its tail to one side

rapidly from stationary state," such that "inertia force and friction force of the moving tail and a body are changed to the moment of rotation." Id.

a. Anticipation of Claims 31-38

In its motion for summary judgment, Defendant contends that Hirata anticipates all of the asserted claims of the '785 patent. See Def.'s Br. Supp. Mot. for Summ. J. at 19-20, 21-23, ECF No. 54. Plaintiffs disagree, pointing to Mr. Ayton's opinions advanced in his rebuttal invalidity report. See Pls.' Br. in Opp'n at 11, ECF No. 68.

i. Claim 31 - the "configured to flex" limitation

The only limitation of Claim 31 disputed by the parties is the "configured to flex" limitation. See Dep. Tr. of Mr. Ayton at 352:2-6, ECF No. 70-1. However, as with the previously discussed prior art references, Dr. Triantafyllou's conclusion hinges upon his broad reading of the "configured to flex" limitation, contending that "the [Hirata] drive motion causes the appendage to bend at the joint between the tail peduncle and tail fin such that the entire appendage is not in a single plane." Id. at 40. Furthermore, Dr. Triantafyllou makes no assertion that Hirata's "drive motion" is a cyclical relative motion between the appendage and the torso of the Hirata figure. Dr. Triantafyllou cites Figure 4 of Hirata, reproduced below, in support of his conclusion that Hirata discloses the "configured

to flex" limitation.

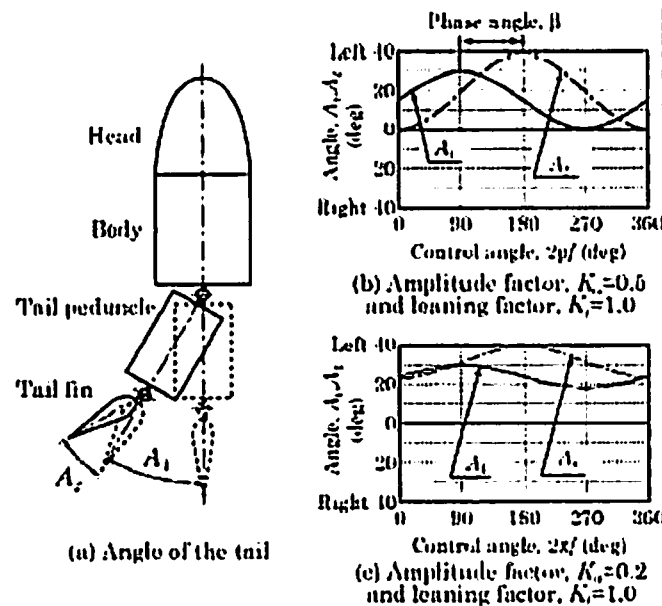


Fig. 4 Fundamental moving pattern

Plaintiffs dispute that Hirata satisfies the "configured to flex" limitation of Claim 31 for the same reasons as discussed regarding the previously discussed references, again referring to Mr. Ayton's rebuttal invalidity report. Mr. Ayton asserts that, like the previously discussed references, Hirata discloses "a segmented tail with two pivotally-connected portions (a tail peduncle and a tail fin) that are driven into a bent configuration by the operation of two separate servomotors," Rebuttal Invalidity Report of Mr. Ayton at 22, ECF No. 68-4, rather than "a flexible appendage that is 'configured to bend, in response to the [cyclical relative] motion [between the appendage and the torso] produced by said drive, such that the entire appendage is not in a single plane,'" id. at 22-23. Mr. Ayton concludes that the "Hirata fish thus operates in a

fundamentally different manner than that of the claimed invention" in Claim 31 of the '785 patent. Id. at 23.

The Court cannot determine at this stage of the litigation that no "fair-minded jury could return a verdict for [Plaintiffs] on the evidence presented." Anderson, 477 U.S. at 252. The appendage of the Hirata fish prototype has two segments, and each segment has its own corresponding drive (referred to as a servomotor), the drive "that drives a tail peduncle is set in the body part," and the drive "driv[ing] a tail fin is set in the tail peduncle." See Hirata at 3, ECF No. 54-12. Although Hirata states that the "fish robot swings [or turns] its tail" during all three modes of turning, Hirata does not state that the drive (or drives) produces a cyclical motion between the appendage and the torso. Id. Nor does Dr. Triantafyllou allege that such motion is inherent in Hirata. See In re Cruciferous Sprout Litig., 301 F.3d at 1349. Accordingly, because the Court determines that a genuine dispute of material fact exists as to whether Hirata anticipates Claim 31 of the '785 patent, Defendant is not entitled to summary judgment based on its argument that independent Claim 31 of the '785 patent is anticipated by Hirata.

b. Dependent Claims 32-35 and 38

Because the Court finds that genuine issues of material fact exist regarding whether independent Claim 31 is anticipated

by Hirata, Defendant is likewise not entitled to summary judgment of invalidity with respect to dependent Claims 32, 33, 34, 35, or 38 of the '785 patent, as those claims are dependent upon independent Claim 31. See RCA Corp., 730 F.2d at 1446.

C. Plaintiffs' Motion for Partial Summary Judgment on Infringement

In light of the Court's determination that all of the asserted claims are invalid due to anticipation or obviousness, the Court finds that the parties' arguments and evidence fail to demonstrate any genuine issue of material fact as to Plaintiffs' infringement claims. Accordingly, the Court **DENIES** Plaintiffs' motion for partial summary judgment claiming that Defendant has infringed Claims 31, 32, 34, and 35 of the '785 patent.


IV. CONCLUSION

For the reasons stated above, Defendant's motion seeking summary judgment is **GRANTED**, and Plaintiffs' motion seeking partial summary judgment is **DENIED**.

The Clerk is **DIRECTED** to send a copy of this Opinion and Order to all counsel of record.

IT IS SO ORDERED.

Norfolk, Virginia
July 18, 2014

/s/ 
Mark S. Davis
UNITED STATES DISTRICT JUDGE